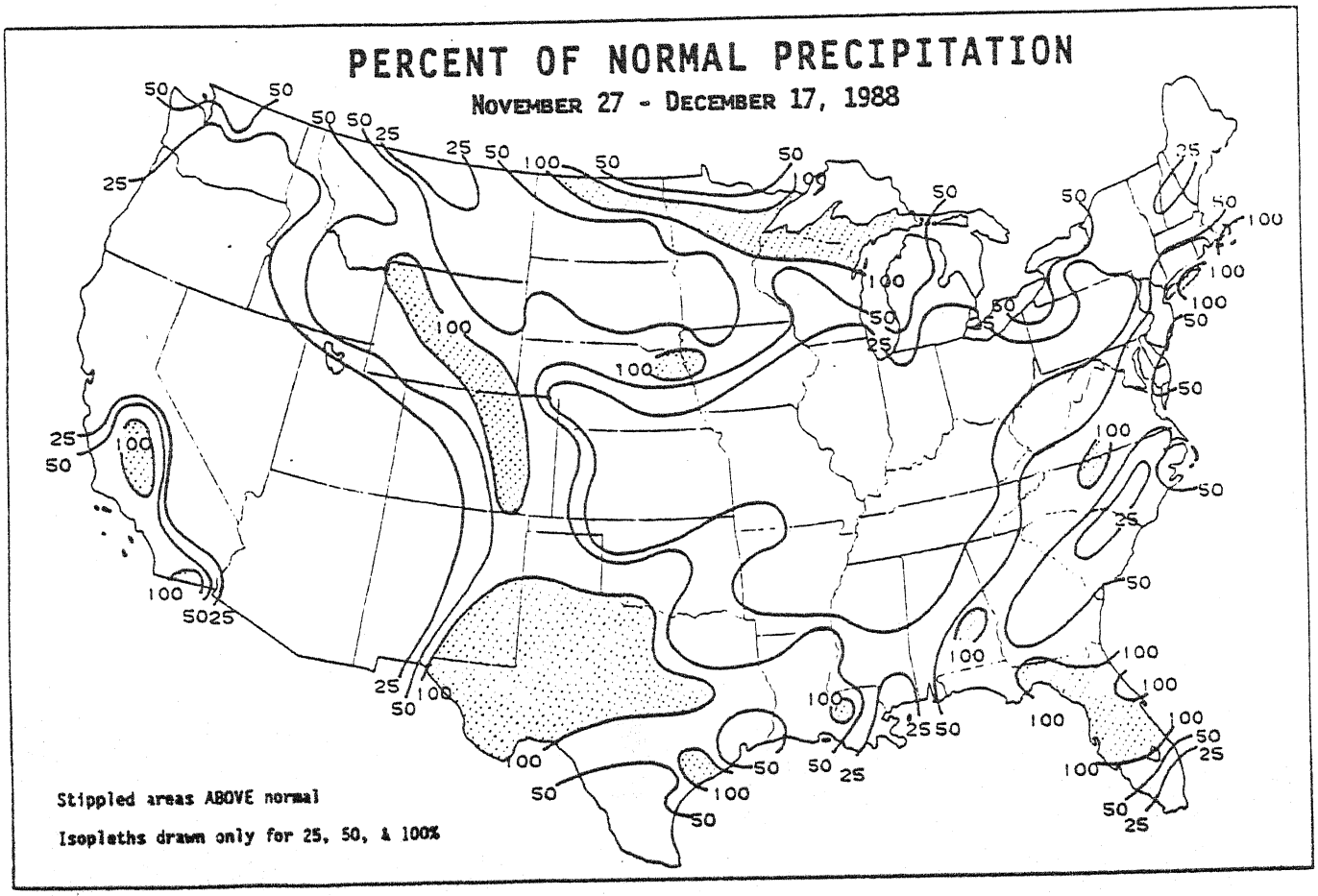
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

No. 88/51 Washington, DC December 17, 1988



AFTER MUCH OF THE NATION EXPERIENCED AN UNUSUALLY WET NOVEMBER, THE PAST 3 WEEKS HAVE BEEN EXTREMELY DRY THROUGHOUT MOST OF THE CONTIGUOUS UNITED STATES, ESPECIALLY THE FAR WEST, THE MIDDLE MISSISSIPPI, TENNESSEE, AND OHIO VALLEYS, AND NEW ENGLAND.

UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

WEEKLY CLIMATE BULLETIN

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This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

Highlights of major global climatic events and anomalies.
U.S. climatic conditions for the previous week.
U.S. apparent temperatures (summer) or wind chill (winter).
Global two-week temperature anomalies.
Global four-week precipitation anomalies.
Global monthly temperature and precipitation anomalies.
Global three-month precipitation anomalies (once a month).
Global twelve-month precipitation anomalies (every 3 months).
Global temperature anomalies for winter and summer seasons.
Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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Washington, DC 20233
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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF DECEMBER 17, 1988

(Approximate duration of anomalies is in brackets)

1. United States and Canada:

VERY COLD WEATHER PREVAILS.

Cold arctic air invaded the northeastern United States and southeastern Canada and caused very low temperatures, as much as 7.7°C (13.9°F) below normal. See U.S. Weekly Climate Highlights [1 week].

2. Argentina, Bolivia, Paraguay, and Brazil:

DRYNESS PERSISTS.

Little or no precipitation was observed at most stations in northern Argentina, southern Bolivia, central Paraguay, and southern Brazil [25 weeks].

3. Eastern Europe:

LOW TEMPERATURES PERSIST.

Unseasonably cold conditions were limited to southern Sweden and western European Soviet Union where temperatures were as much as 5.9°C (10.6°F) below normal [8 weeks].

4. Eastern Siberia:

MILD CONDITIONS REMAIN.

A late season warm spell, with temperatures up to 12.4°C (22.0°F) above normal, persisted in eastern Siberia [10 weeks].

5. Taiwan and East Central China:

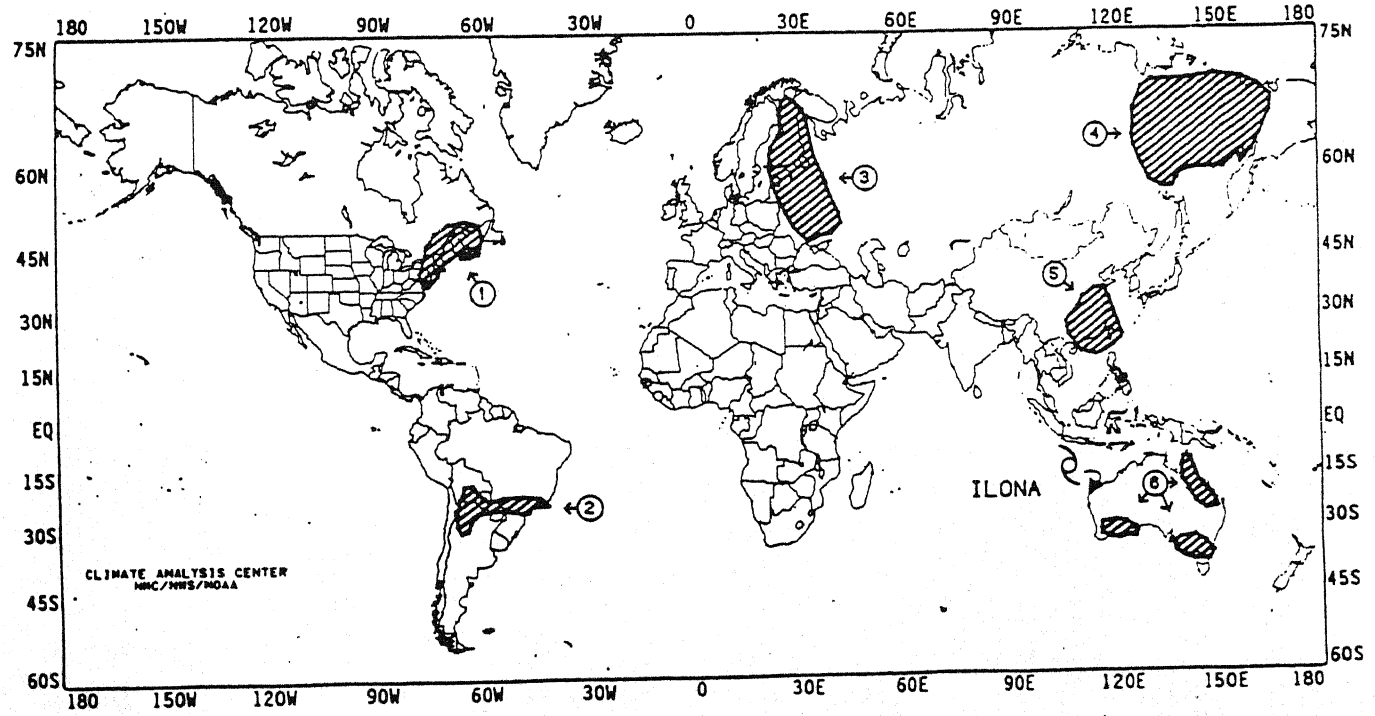
REGION VERY DRY.

Little or no precipitation fell on Taiwan and east central China [12 weeks].

6. Australia:

WETNESS PERSISTS IN NORTHEAST, DIMINISHES IN SOUTH.

Moderate to heavy precipitation fell in Queensland. The maximum amount reported was 270.8 mm (10.66 inches). Drier conditions prevailed in the southern part of the continent [7 weeks].



Approximate locations of the major anomalies and events described above are shown on this map. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, longer term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

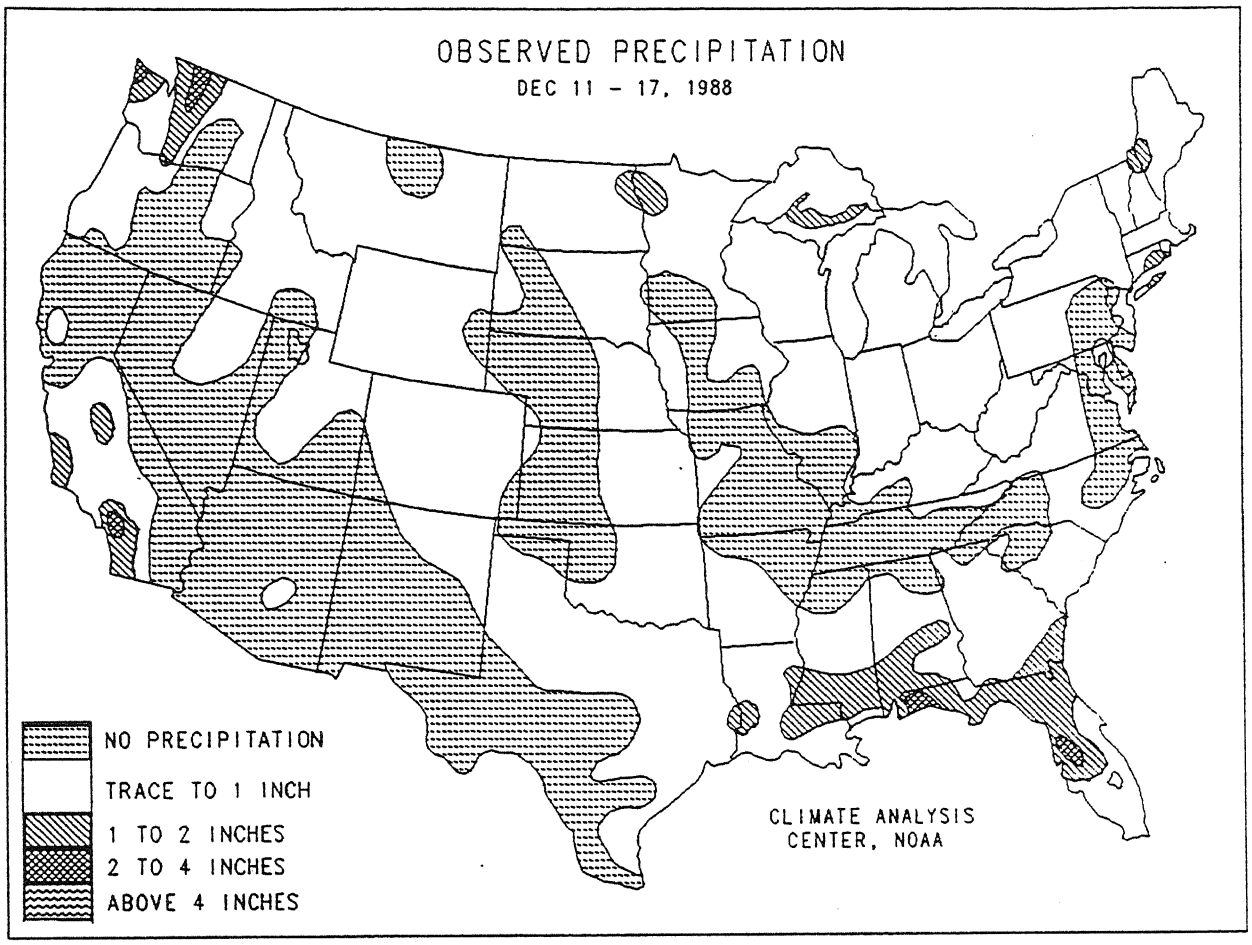
FOR THE WEEK OF DECEMBER 11 THROUGH DECEMBER 17, 1988.

After experiencing an unusually wet November, much of the northwestern and eastern half of the nation has been extremely dry during the past three weeks (see front cover). With the exception of southern Alaska and parts of Hawaii, very few areas of the U.S. recorded significant precipitation last week. In the West, scattered stations along the Washington and Oregon coasts and in the northern Cascades measured between 1 and 3 inches of precipitation, according to the River Forecast Centers. Farther south, an upper-air disturbance triggered showers and thunderstorms in portions of southern California and dumped light snow on the mountains east of Los Angeles. Moderate to heavy rainfall amounts were reported in sections of southern Louisiana and along the eastern Gulf Coast, while locally heavy lake- effect snows blanketed the snow belt regions of Lakes Superior, Michigan, Erie, and Ontario. Early in the week, much of Long Island received between 4 and 8 inches of snow from a rapidly intensifying Atlantic storm system. Torrential rains fell along the south-central Alaskan coast (more than 11 inches) and on portions of Hawaii (see Table 1). Light to moderate precipitation amounts were observed along the northern and southern Pacific Coasts, in parts of the northern and central Rockies, from North Dakota eastward to Massachusetts, and in most of the South from eastern Texas to the Carolinas and Florida. In eastern North Carolina, the precipitation was in the form of snow as up to 4 inches covered the area. Little or no precipitation occurred along the central Pacific Coast, throughout the Intermountain West, the southern thirds of the Rockies and Great Plains, in sections of the north-central Great Plains, and from the middle Mississippi Valley eastward to the mid-Atlantic.

Frigid arctic air invaded much of the eastern half of the country as subzero readings were reported at many stations in the northern Great Plains, upper Midwest, central Appalachians, and New England. The greatest negative temperature departures (between -11° and -15°F) were found in New England, the central Appalachians, and mid-Atlantic (see Table 2). Several stations in the Northeast tied or set new daily minimum temperature records early in the week. Subnormal temperatures also prevailed in the South from Texas to Florida as departures averaged between -4° and -8°F and lows dipped below freezing as far south as the Gulf of Mexico and north-central Florida (see Figure 1). In sharp contrast, much of the western half of the U.S. reported near to above normal weekly temperatures and Alaska experienced abnormally mild weather (see Table 3). Warm chinook winds in the northern Rockies pushed readings into the fifties and sixties in Montana and Wyoming, while mild southerly flow brought record high temperatures (near 70°F) to portions of the central Great Plains. In the lower 48 states, the greatest positive temperature departures (between +7° and +12°F) were located in the upper Missouri Valley and Arizona. Farther north, after several weeks of bitterly cold weather, most of western, central, and northern Alaska recorded unseasonably mild conditions as temperatures were as much as 29°F above normal.

TABLE 1. Selected stations with one and one half or more inches of precipitation for the week.

Station	Amount(In)	Station	Amount(In)
Yakutat, AK	11.55	Kodiak, AK	1.89
Kokee, Kauai, HI	6.60	New Orleans NAS, LA	1.86
Valdez, AK	6.51	Islip, NY	1.73
Kahului, Maui, HI	4.16	Santa Ana MCAS, CA	1.68
Cordova/Mile 13, AK	4.08	Valparaiso/Eglin AFB, FL	1.66
Sitka, AK	3.14	Gainesville, FL	1.59
Lihue, Kauai, HI	2.97	San Diego/Miramar, CA	1.57
Pensacola NAS, FL	2.30	Tampa, FL	1.56
Quillayute, WA	2.20	Homer, AK	1.55
Honolulu, Oahu, HI	2.09	Pensacola, FL	1.50
Cold Bay, AK	1.89		


OBSERVED PRECIPITATION
DEC 11 - 17, 1988
NO PRECIPITATION
TRACE TO 1 INCH
1 TO 2 INCHES
2 TO 4 INCHES
ABOVE 4 INCHES
CLIMATE ANALYSIS
CENTER, NOAA

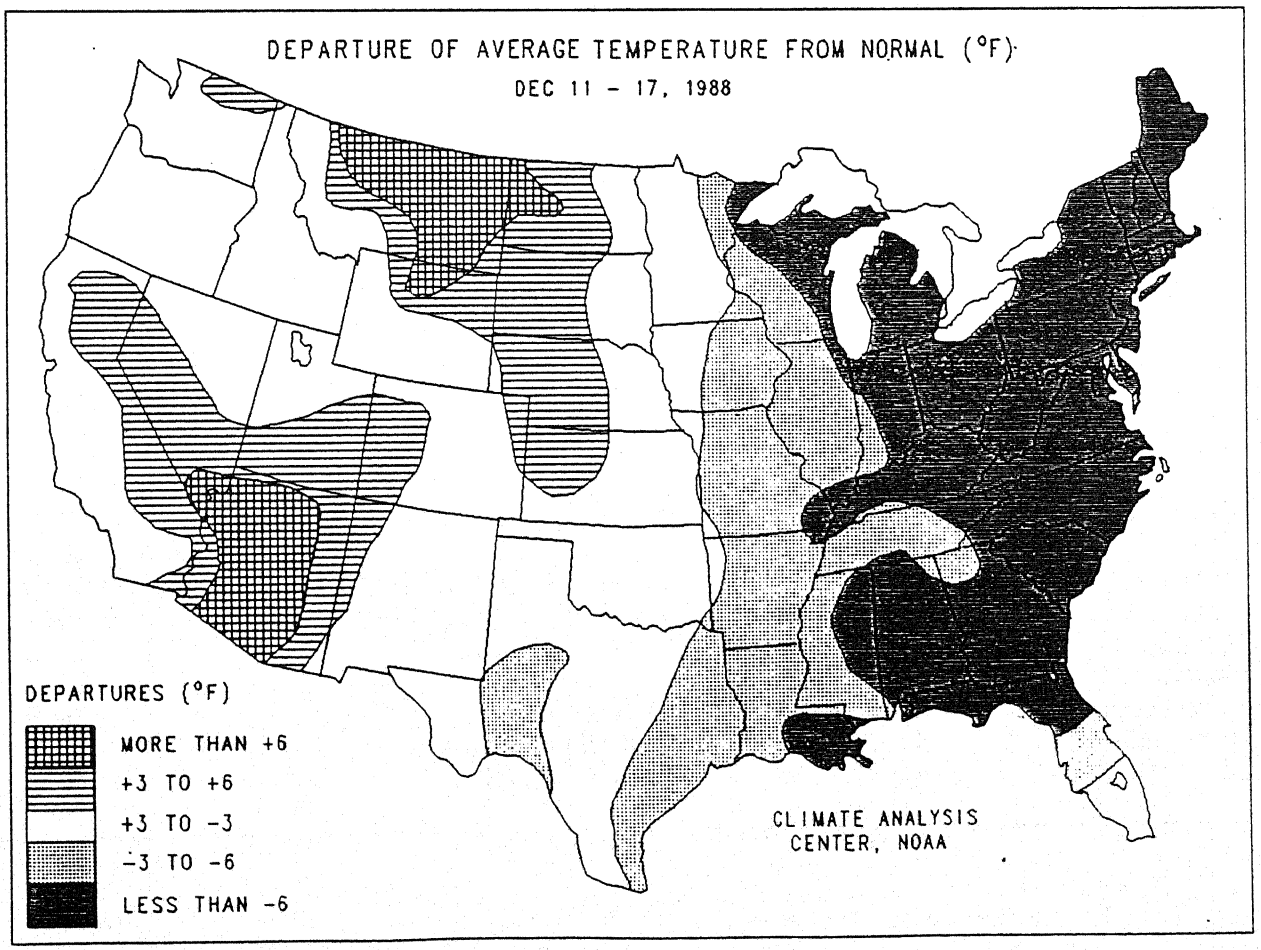
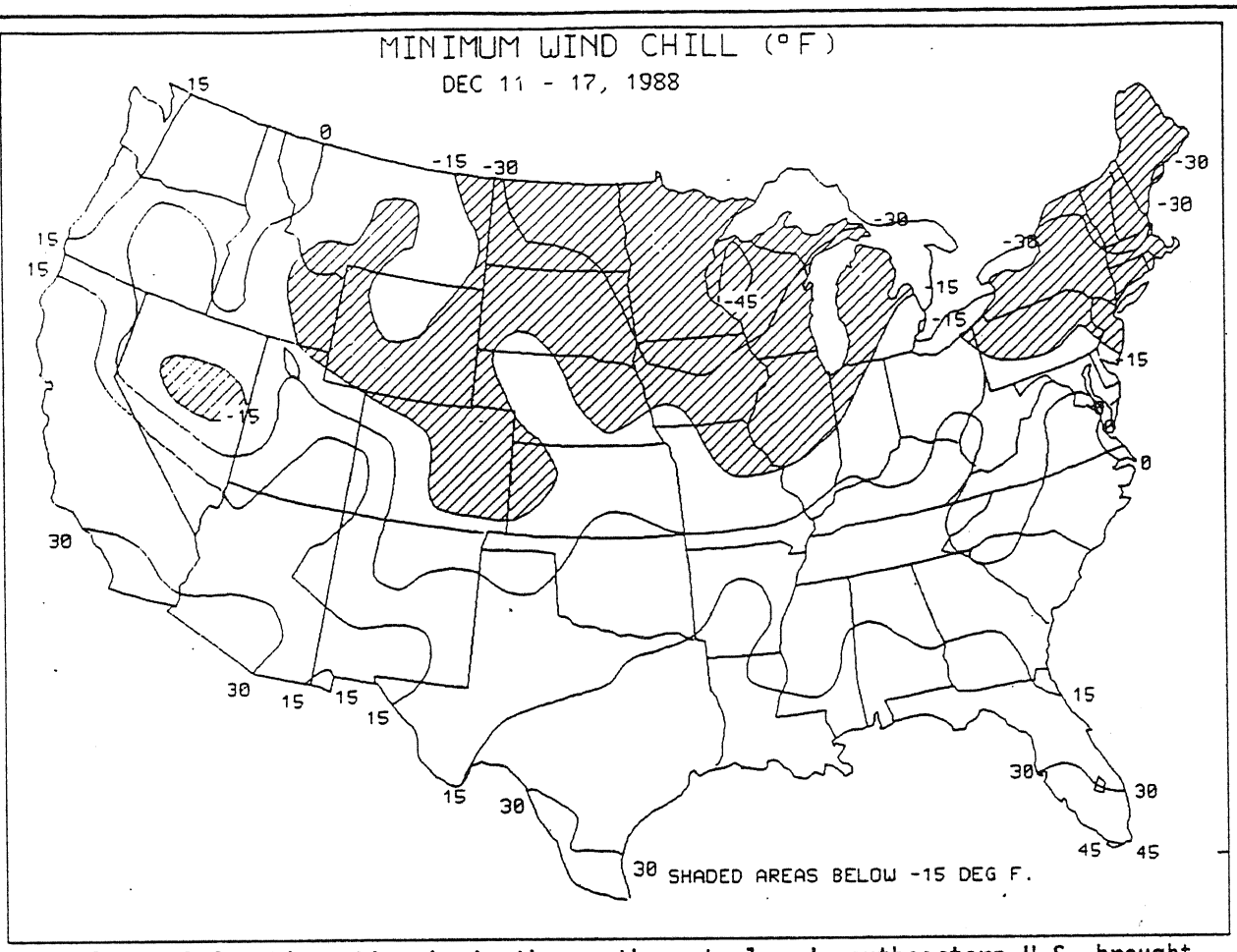

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)
DEC 11 - 17, 1988
DEPARTURES (°F)
MORE THAN +6
+3 TO +6
+3 TO -3
-3 TO -6
LESS THAN -6
CLIMATE ANALYSIS
CENTER, NOAA

TABLE 2. Selected stations with temperatures averaging 10.0°F or more BELOW normal for the week.

Station	TDepNml	AvgT(°F)	Station	TDepNml	AvgT(°F)
Glens Falls, NY	-14.9	9.3	Wilmington, NC	-11.1	37.1
Albany, NY	-14.3	12.3	Morgantown, WV	-11.0	23.2
Binghamton, NY	-13.9	12.4	Washington/Dulles, VA	-10.9	24.7
Utica, NY	-13.7	11.9	Millville, NJ	-10.9	25.0
Rome/Griffiss AFB, NY	-13.7	12.2	Washington/National,DC	-10.9	28.2
Wilkes-Barre, PA	-12.9	17.1	Beckley, WV	-10.8	23.0
Mt. Washington, NH	-12.8	-3.6	Sault Ste. Marie, MI	-10.6	9.1
Bradford, PA	-12.7	12.1	Hartford, CT	-10.6	18.8
Syracuse, NY	-12.6	16.1	Parkersburg, WV	-10.6	25.1
Atlantic City, NJ	-12.5	24.0	Bridgeport, CT	-10.5	23.7
Elkins, WV	-12.4	19.8	Alpena, MI	-10.4	13.9
Williamsport, PA	-12.0	19.0	Buffalo, NY	-10.4	18.9
Montpelier, VT	-11.8	8.9	Harrisburg, PA	-10.4	23.0
Burlington, VT	-11.8	11.0	New York/La Guardia,NY	-10.4	25.9
Wrightstown/McGuire AFB,NJ	-11.8	23.6	Allentown, PA	-10.3	21.4
Augusta, ME	-11.7	12.3	Baltimore, MD	-10.3	26.1
Richmond, VA	-11.6	28.3	Gainesville, FL	-10.3	47.5
Poughkeepsie, NY	-11.5	17.8	Akron, OH	-10.2	20.2
Salisbury, MD	-11.4	27.4	Newark, NJ	-10.2	25.1
Lebanon, NH	-11.3	11.2	New York/Kennedy, NY	-10.2	25.6
Rochester, NY	-11.3	17.9	New Bern, NC	-10.2	36.4
Dover AFB, DE	-11.3	25.8	Caribou, ME	-10.1	5.8
Patuxent River NAS, MD	-11.3	27.9	Pittsburgh, PA	-10.0	21.9
Massena, NY	-11.2	8.8	Martinsburg, WV	-10.0	24.1
Altoona, PA	-11.1	18.3	Wilmington, DE	-10.0	25.4
Bluefield, WV	-11.1	24.2			

TABLE 3. Selected stations with temperatures averaging 7.0°F or more ABOVE normal for the week.

Station	TDepNml	AvgT(°F)	Station	TDepNml	AvgT(°F)
Gulkana, AK	+29.1	23.2	Cordova/Mile 13, AK	+10.6	34.2
	+26.7	22.1	Bethel, AK	+10.5	15.3
	+24.2	14.1	King Salmon, AK	+10.4	22.2
	+20.5	3.2	Homer, AK	+10.2	32.1
	+19.8	11.4	Miles City, MT	+9.7	31.5
	+18.5	27.3	Glasgow, MT	+9.3	26.4
	+16.2	28.1	Juneau, AK	+8.5	35.6
AK	+15.6	2.9	Tucson/Davis-Monthan AFB, AZ	+8.0	58.9
	+14.8	28.7	Phoenix, AZ	+7.8	60.9
	+13.4	32.5	Yakutat, AK	+7.8	34.9
	+12.3	-0.8	Worland, WY	+7.8	26.9
	+12.0	7.7	Great Falls, MT	+7.7	34.3
	+11.9	25.2	Williston, ND	+7.7	23.6
	+11.7	13.0	Sitka, AK	+7.3	39.9
	+11.5	31.3	Sheridan, WY	+7.1	32.2
	+11.4	32.7	Prescott, AZ	+7.0	44.1



A blast of frigid arctic air in the north-central and northeastern U.S. brought low temperatures and wind chills less than -30°F to parts of the region (top). Subzero lows were common across the upper Midwest and New England as bitterly cold weather prevailed throughout the eastern half of the nation (bottom).

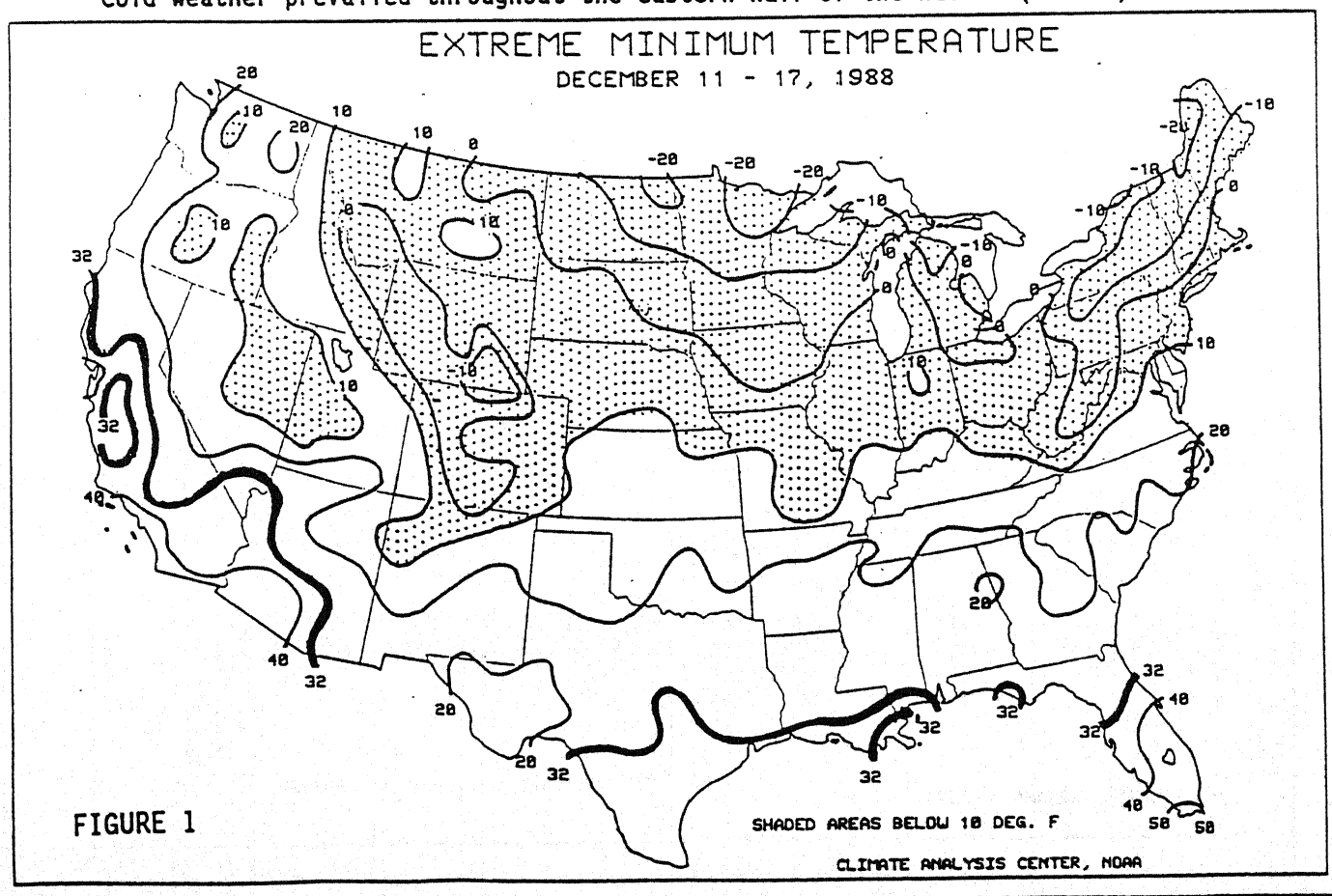
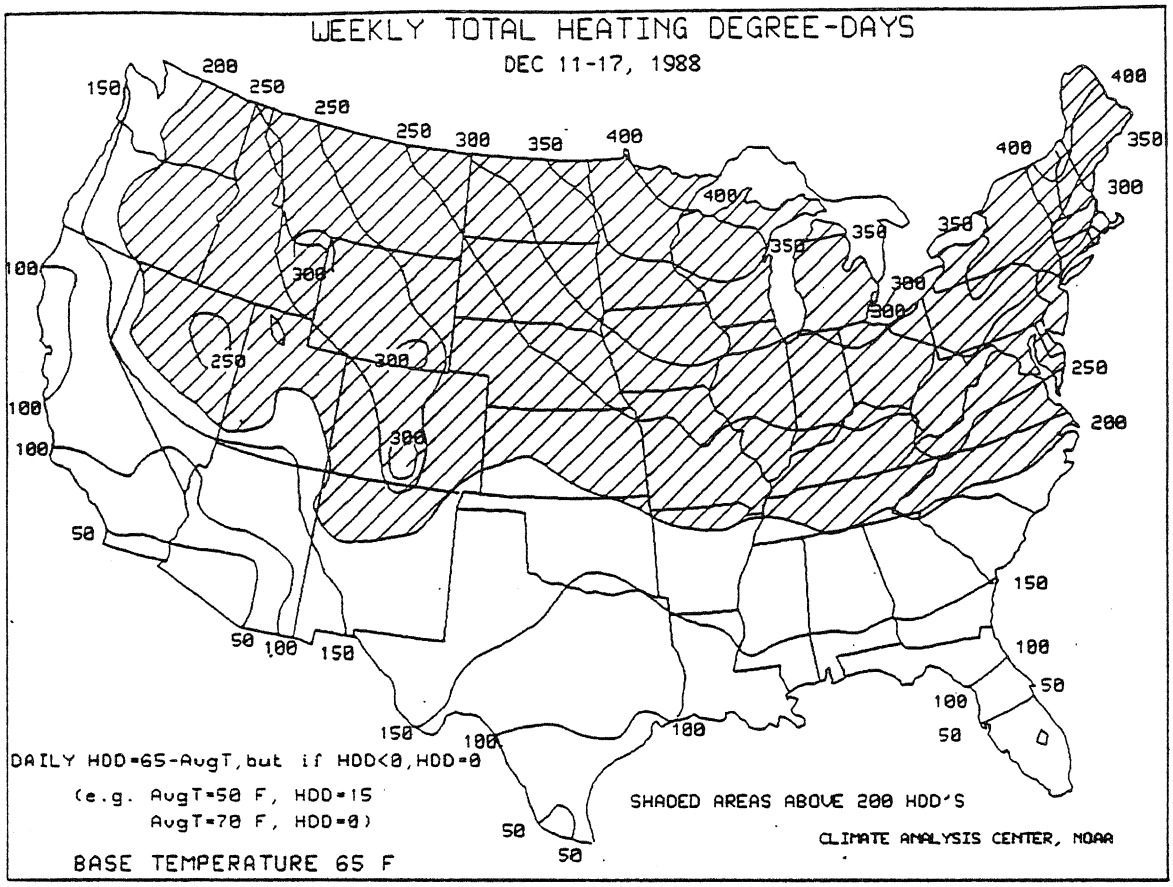
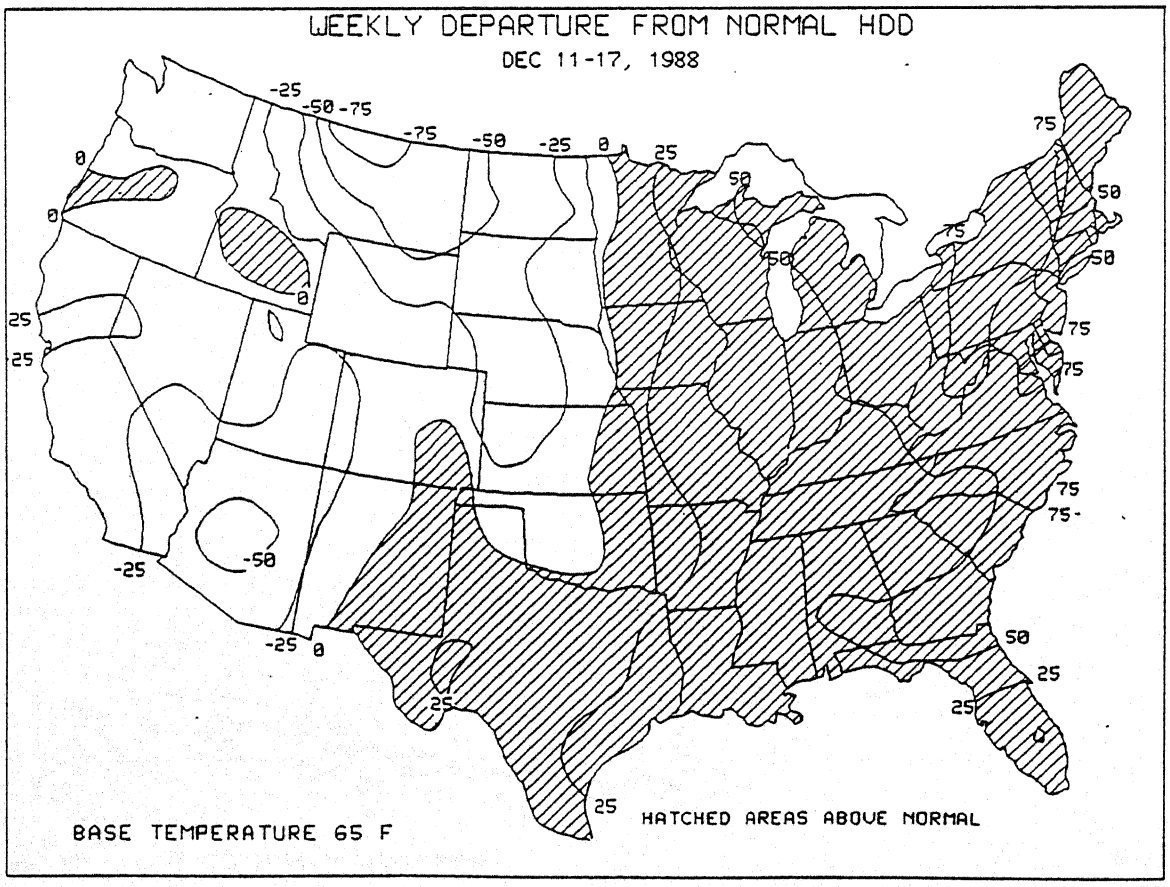


FIGURE 1

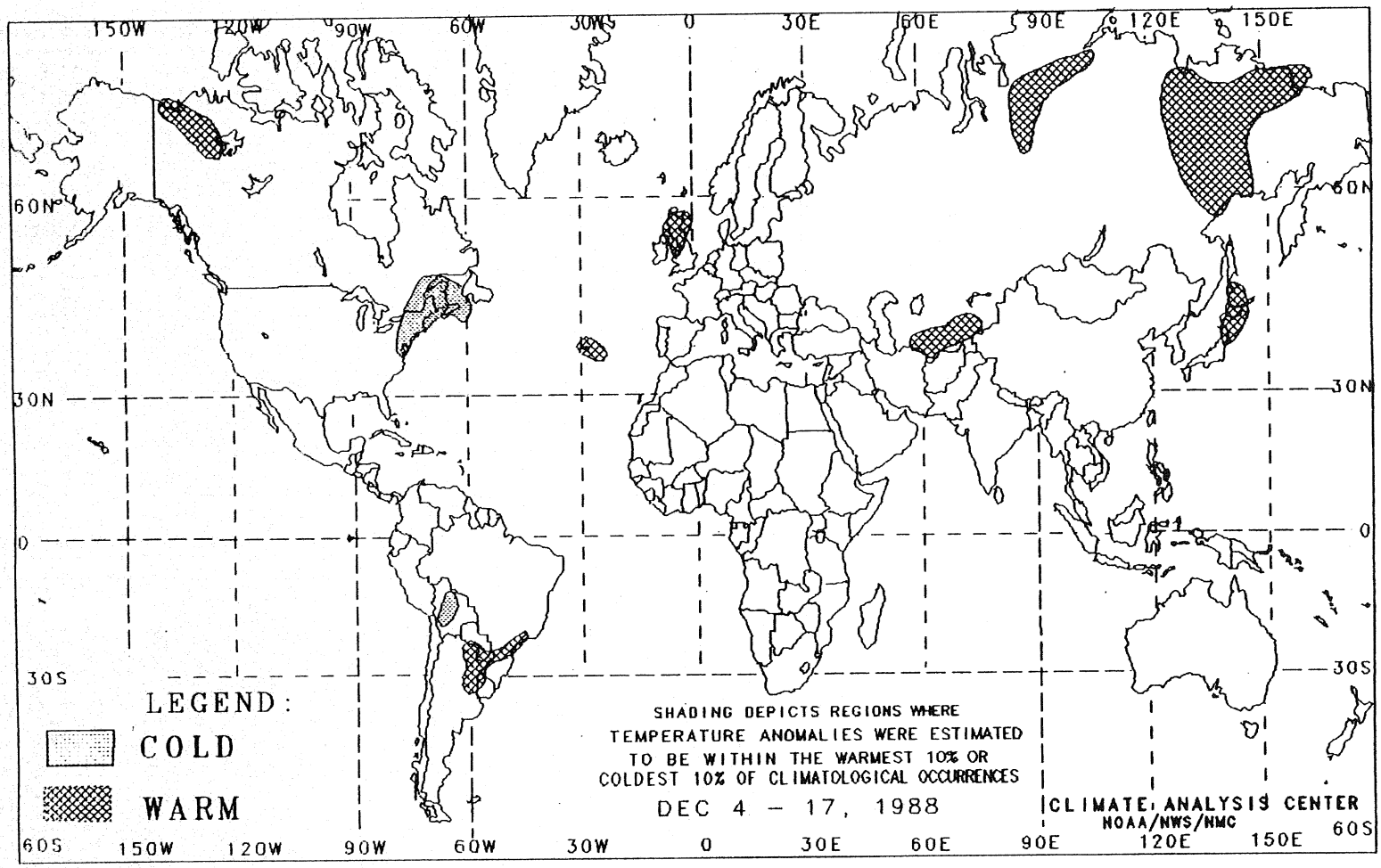


Weekly heating usage of more than 300 HDD's was common across the northern and northeastern tier of states (top) as bitterly cold arctic air covered the eastern half of the nation and increased the weekly HDD demand by more than 25% in most of the Atlantic Coast states (bottom).



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

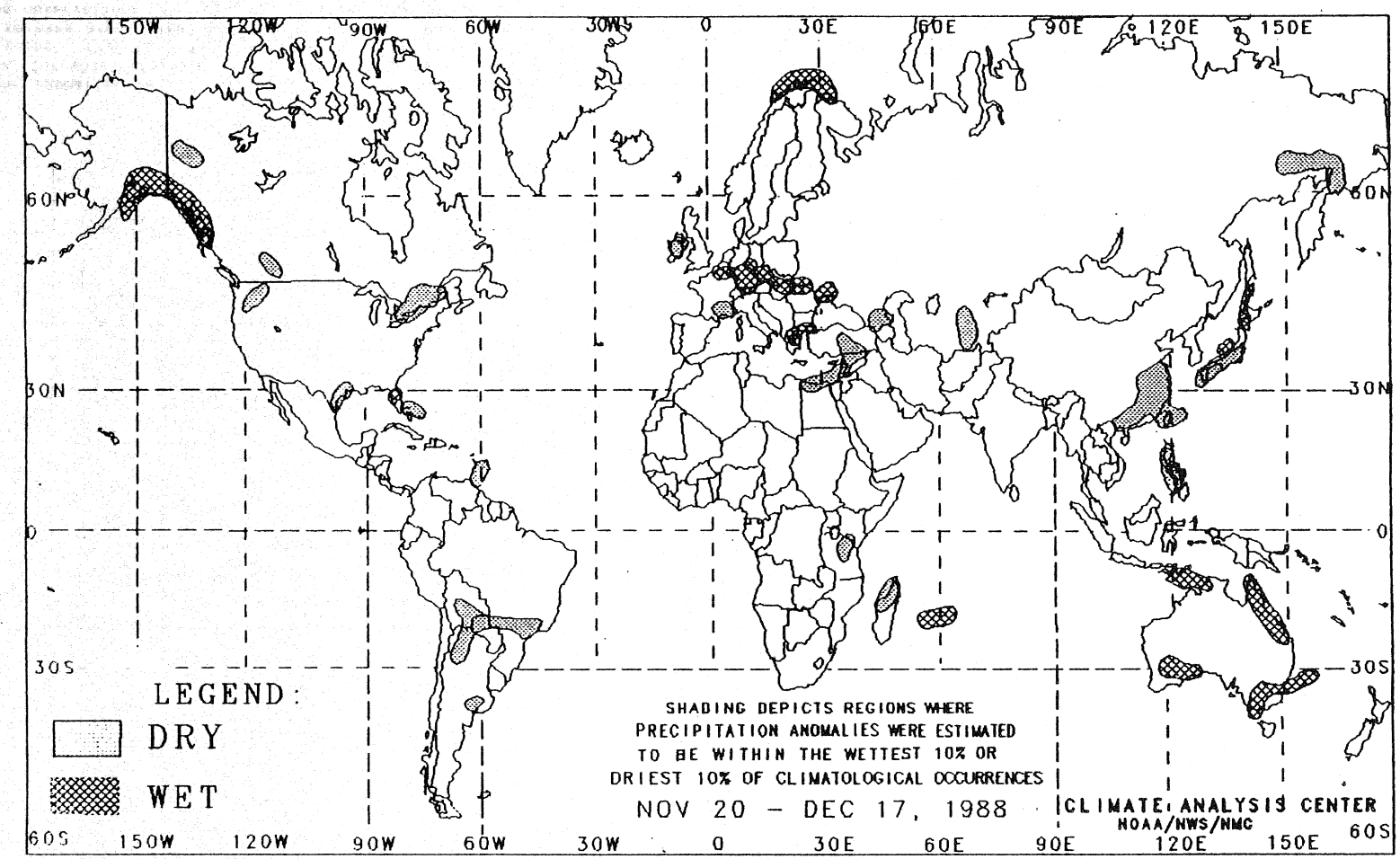
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining precentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

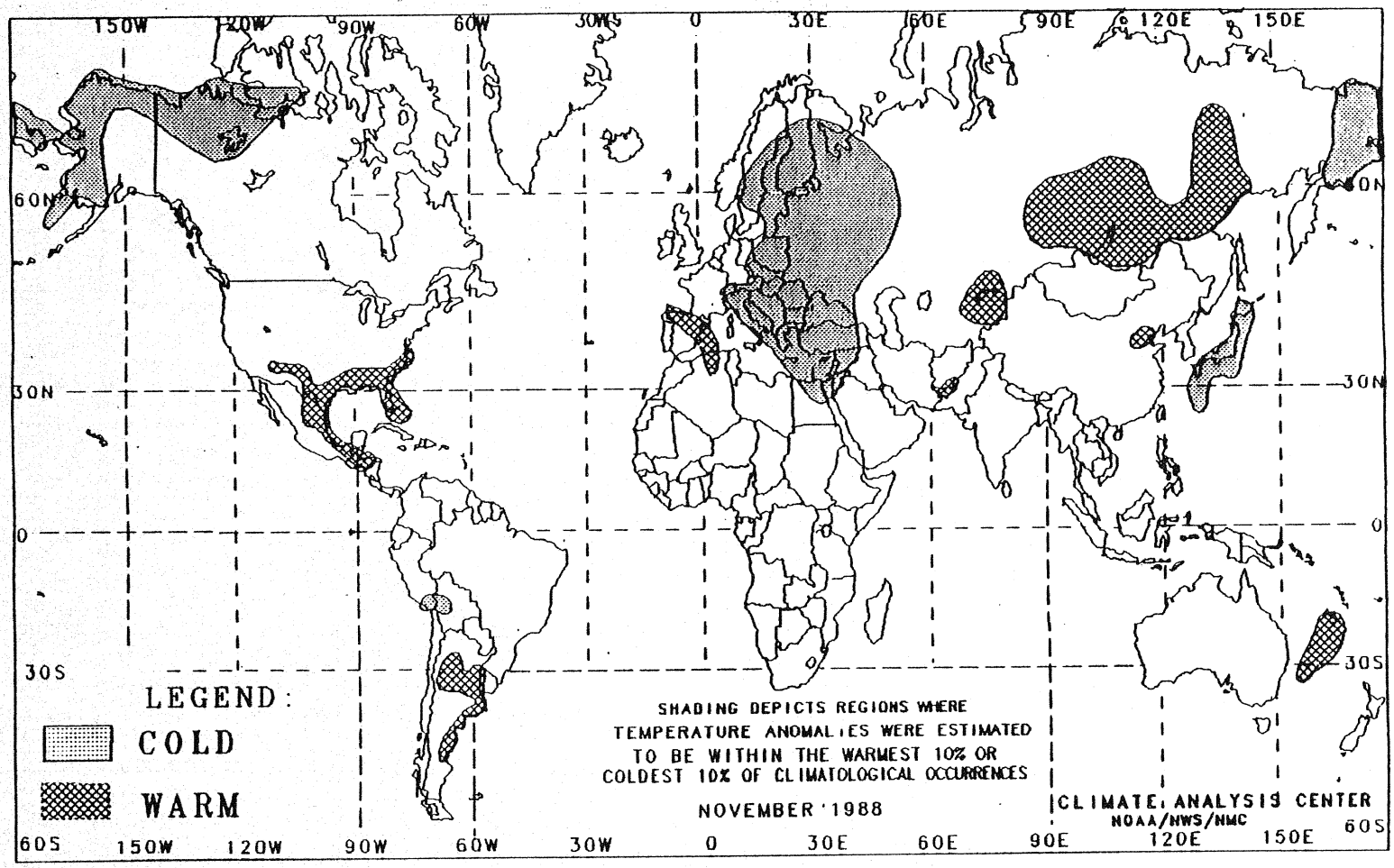
In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL TEMPERATURE ANOMALIES

1 Month



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

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In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining precentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

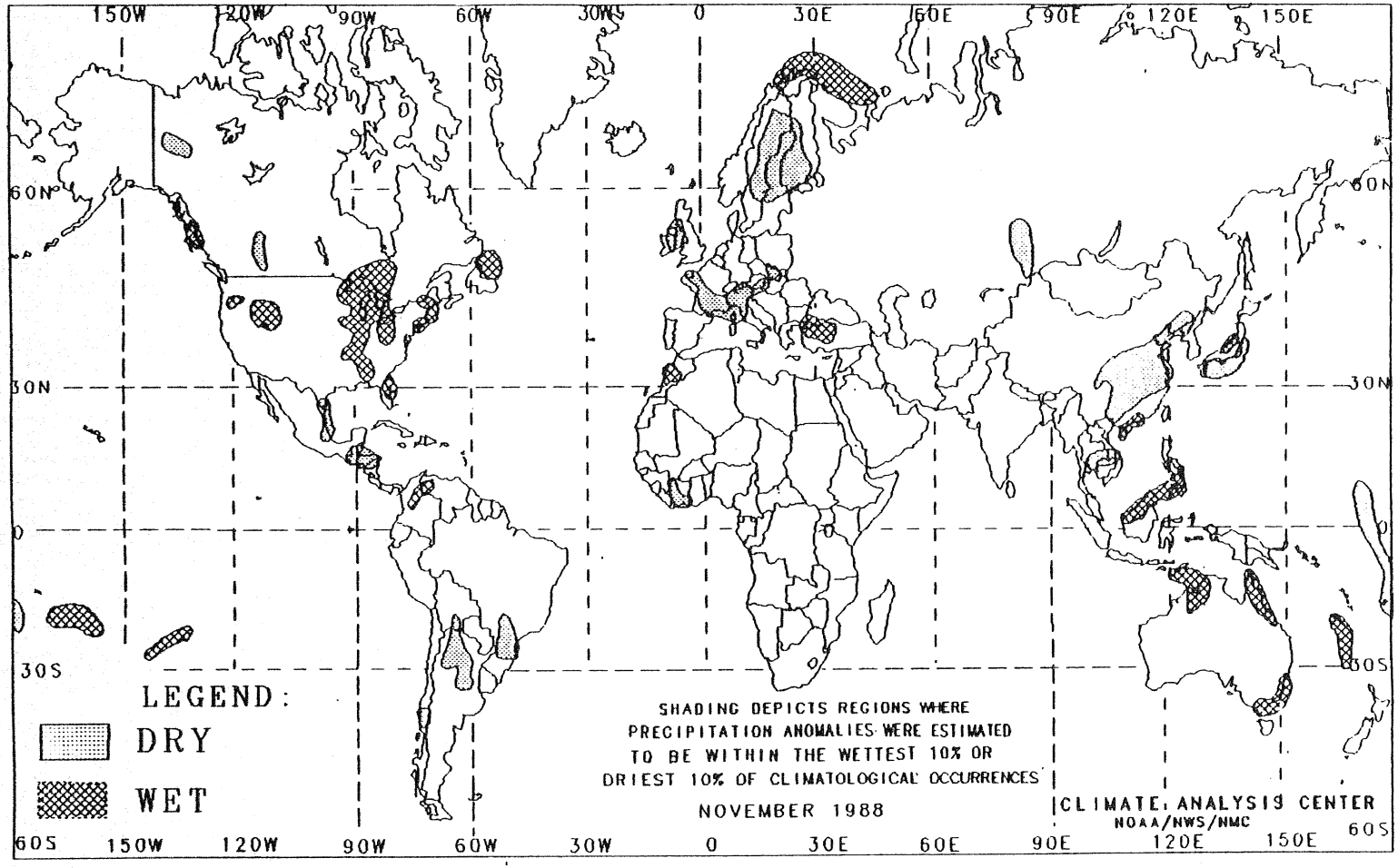
The chart shows general areas of one month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

PRINCIPAL TEMPERATURE ANOMALIES - NOVEMBER 1988

REGIONS AFFECTED	TEMPERATURE AVERAGE (C)	DEPARTURE F/NORMAL (C)	COMMENTS
Alaska and Northwestern Canada	-28 to -1	-2 to -10	COLD - 2 to 17 weeks.
Southeastern United States and Bahamas	+16 to +26	+2 to +3	Very warm second half of November.
South Central United States and Central America	+12 to +27	+2 to +4	WARM - 4 to 8 weeks.
Peru and Bolivia	+9 to +19	Around -2	COLD - 2 to 4 weeks.
Argentina and adjacent Uruguay	+18 to +29	+2 to +3	Very warm first half of November.
Eastern Europe and Northeastern Africa	-9 to +19	-2 to -8	COLD - 2 to 10 weeks.
Spain and Algeria	+6 to +16	Around +2	Very warm first half of November.
Pakistan	+10 to +17	Around +2	Very warm first half of November.
Kazakh S.S.R.	-2 to +8	+2 to +6	MILD - 5 weeks.
South Central Siberia	-32 to -2	+2 to +11	MILD - 4 to 17 weeks.
Extreme Eastern Siberia	-25 to -11	-3 to -5	COLD - 4 to 7 weeks.
Vicinity of Beijing, China	Around +7	+2 to +3	MILD - 3 to 7 weeks.
Japan	0 to +21	Around -2	Very cold second half of November.
New Caledonia	+21 to +28	Around +2	Very warm early in November.

GLOBAL PRECIPITATION ANOMALIES

1 Month



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the one month period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total one month precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of one month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

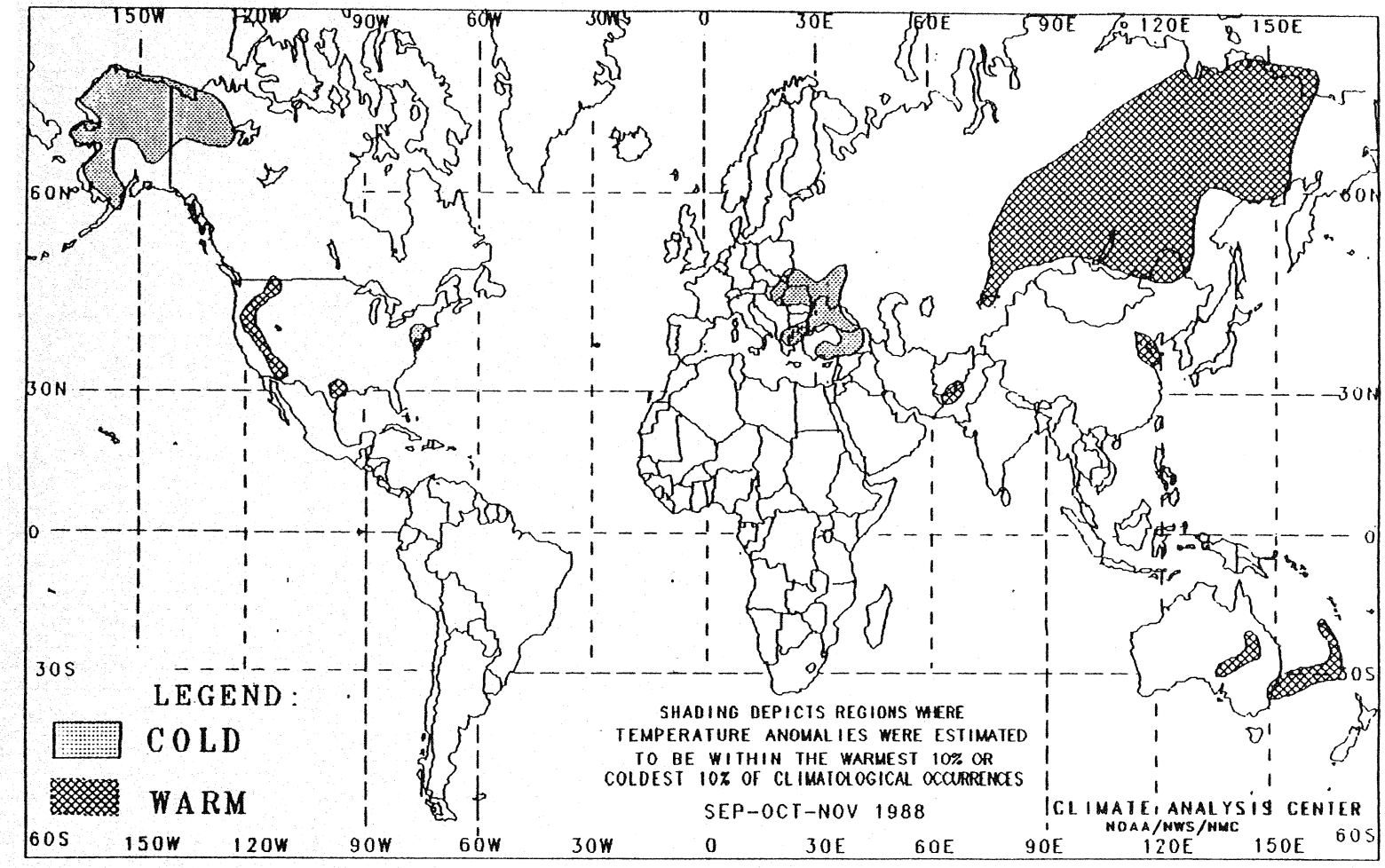
PRINCIPAL PRECIPITATION ANOMALIES - NOVEMBER 1988

REGIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
West Central Yukon	0 to 3	0 to 14	DRY - 7 to 10 weeks.
Queen Charlotte Island, British Columbia	280 to 309	154 to 157	Heavy precipitation second half of November.
Southwestern Alberta	0 to 7	0 to 57	DRY - 9 to 17 weeks.
Northwestern Oregon	62 to 442	199 to 234	WET - 4 weeks.
Northern Great Basin	55 to 85	182 to 276	WET - 4 to 6 weeks.
Central United States and adjacent Canada	48 to 376	153 to 340	WET - 2 to 9 weeks.
New England	97 to 400	154 to 216	Heavy precipitation first half of November.
Newfoundland	122 to 177	164 to 235	Heavy precipitation second half of November.
Northern Florida	84 to 189	178 to 397	WET - 4 to 5 weeks.
Northeastern Mexico	0 to 17	0 to 32	DRY - 8 to 14 weeks.
Honduras	24 to 72	17 to 38	DRY - 5 to 7 weeks.
Colombia and Venezuela	235 to 376	127 to 402	WET - 4 weeks.
Central Chile	Around 20	20 to 29	DRY - 6 weeks.
Northern Argentina	0 to 58	0 to 69	DRY - 10 to 17 weeks.
Southern Brazil	20 to 48	17 to 32	DRY - 6 weeks.
Northern Norway and Northwestern European Soviet Union	61 to 273	110 to 340	WET - 2 to 4 weeks.
Sweden and Finland	9 to 36	18 to 77	DRY - 5 to 9 weeks.

REGIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
Ireland	24 to 54	35 to 55	DRY - 6 weeks.
Eastern Czechoslovakia	14 to 20	24 to 60	DRY - 10 weeks.
South Central Europe	0 to 64	0 to 46	DRY - 6 to 10 weeks.
Turkey	38 to 202	111 to 238	WET - 2 to 4 weeks.
Morocco	81 to 203	248 to 562	WET - 5 weeks.
Ivory Coast	0 to 146	0 to 62	DRY - 6 to 12 weeks.
Kazakh S.S.R.	9 to 27	24 to 47	DRY - 5 weeks.
Eastern China	0 to 27	0 to 44	DRY - 5 to 11 weeks.
Southern and Western Japan	5 to 117	7 to 77	DRY - 6 to 17 weeks.
Western Coast of Japan	244 to 496	160 to 210	Heavy precipitation second half of November.
South Central China	88 to 115	225 to 312	WET - 9 weeks.
Thailand and Vietnam	0 to 103	0 to 28	DRY - 5 weeks.
Malaysia and Philippines	254 to 638	111 to 242	WET - 4 to 9 weeks.
Northwestern Australia and Indonesia	149 to 259	132 to 407	WET - 6 weeks.
Northeastern Australia	125 to 276	206 to 392	WET - 4 to 10 weeks.
Southeastern Australia	109 to 242	162 to 287	WET - 5 to 6 weeks.
New Caledonia	182 to 446	149 to 710	WET - 4 weeks.
Marshall, Kiribati, and Fiji Islands	1 to 183	1 to 54	DRY - 4 to 9 weeks.
Cook Islands	307 to 381	189 to 261	WET - 2 to 6 weeks.
French Polynesia	372 to 703	190 to 512	WET - 4 to 10 weeks.

GLOBAL TEMPERATURE ANOMALIES

3 MONTHS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 78 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

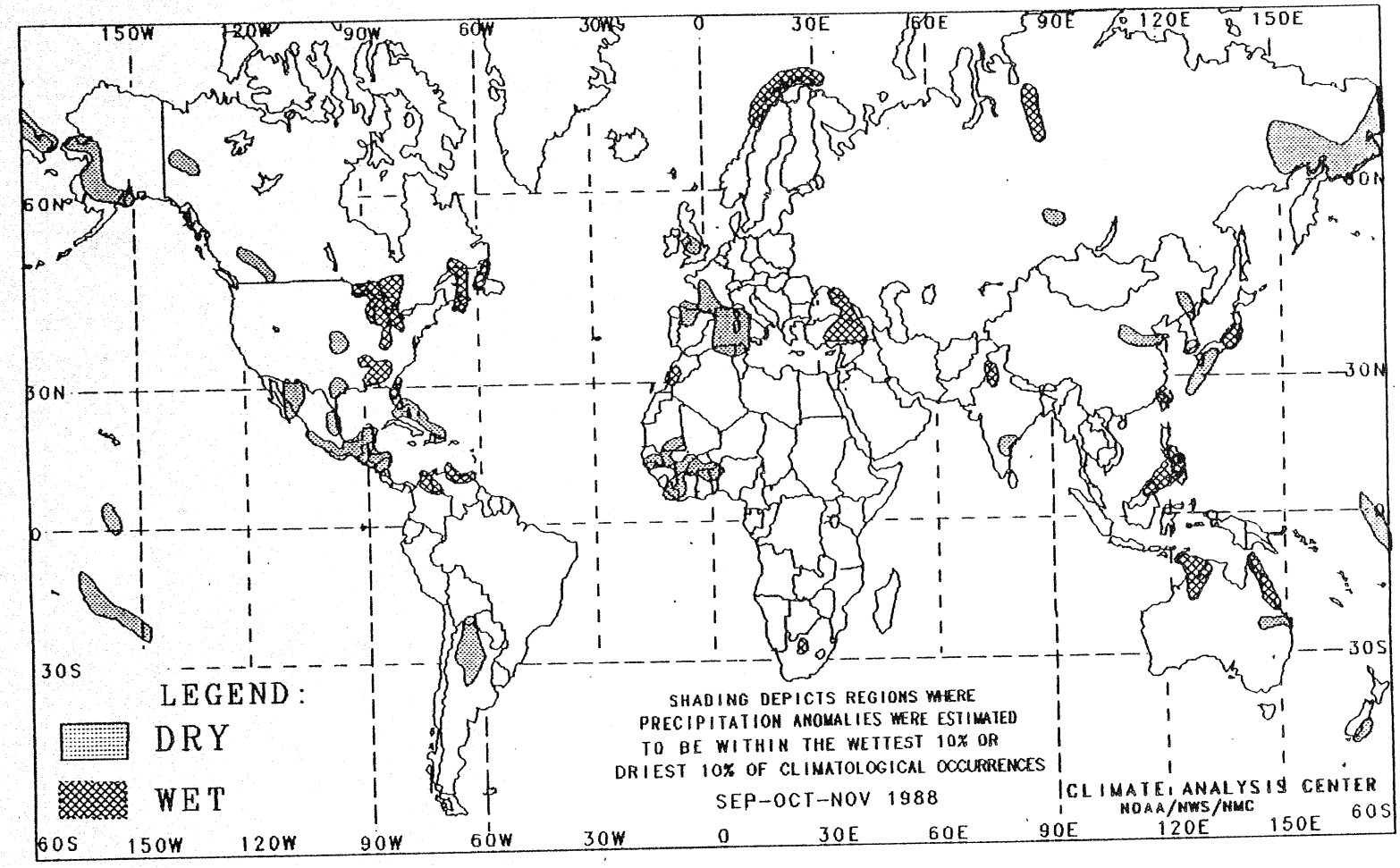
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining precentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

3 MONTHS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.